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I READING AND COMPREHENSION

EXERCISE A Re-ordering paragraphs

Write out the following paragraphs in the order which corresponds to the following headings:

1. Advantages of market gardening 4. Preparation of the plot
2. Importance of seed selection 5. Use of manures and fertilizers
3. Types of soil for market 6. Nursery beds
gardening 7. Transplantation

(a) The plot should be more or less level and laid out in beds. Narrow paths between the beds facilitate planting, watering, weeding and harvesting. Dry season beds slope inwards to hold water in the bed. Rainy season beds are ridged.

(b) The aim of transplanting is to give each plant more space to develop its roots and leaves. Planting distances vary from species to species. The aim is to have a full crop cover of the ground when plants are mature.

(c) Market gardening is the cultivation of vegetables for sale at markets in towns. Vegetables are short-duration crops and all the family labour of the grower can be employed throughout the year. Vegetables can usually be marketed at a good price.

(d) Vegetables which have small seeds such as tomatoes, lettuce and cabbage are planted first in boxes or in special nursery beds to raise the seedlings. When they have grown to a suitable size they are transplanted to prepared beds. The soil should be clean and free from disease organisms. There are various ways of getting rid of disease organisms.

(e) The land selected for market gardening should have a loose, friable, free-draining soil which does not easily get waterlogged. A loam or sandy loam is usually preferred.

(f) Vegetable crops are heavy feeders. Depending on the soil a variable amount of organic manures should be applied. For a very sandy soil a higher proportion is used, about 1:3. Bag fertilizers should be used that contain all the major plant nutrients. For leafy vegetables a mixture with a high nitrogen content is best.

(g) Successful vegetable growing depends on a number of factors. One of the most essential requirements is good seed, which should have high vitality and good breeding. It should be free from disease and pests and suitable for the local conditions. When sown germination should be rapid giving healthy vigorous seedlings.

EXERCISE B Adding statements

Add one of the following statements for each of the caret marks \( \_ \) in the paragraphs above.

(i) A clay loam may be suitable if there is no impermeable layer within three feet of the surface.
(ii) They should have an ample supply of manures and fertilizers.
(iii) Steam can be passed into mounds of nursery soil for about 24 hours.
(iv) The use of commercially prepared varieties is preferable to home grown stock.
(v) Chillis and egg plants should be planted in rows about 2 feet apart with a spacing of about 2 feet along the rows.
(vi) Vegetable crops can be produced in succession on the same plot.
(vii) Fruit requires a mixture with a higher level of potassium and phosphate in the later stages of growth.
(viii) Leafy vegetables are planted in raised beds about 6 to 9 inches apart.
(ix) Market gardening yields a much higher income than any other type of farming.
(x) Water can run off easily.
(xi) The seedlings will grow stronger and be better able to survive when planted out in the production beds.
(xii) A stiff hard clay should be avoided.
(xiii) Smaller varieties and those which mature earlier must be planted closer.
(xiv) A chemical sterilant such as methyl bromide can be used.

EXERCISE C Relationships between statements

Insert one of the following expressions in each of the statements you have just added to the paragraphs in Exercise A.

in this way  however
whereas  on the other hand
hence  therefore
in contrast  consequently
for example  for instance
alternatively  thus
for these reasons  generally
EXERCISE D Contextual reference

What do the following expressions refer to in the paragraphs you have written out?

(a) Paragraph 2: varieties
(b) Paragraph 5: a mixture
(c) Paragraph 5: a higher proportion
(d) Paragraph 6: the soil
(e) Paragraph 7: varieties
(f) Paragraph 7: the aim

II LANGUAGE IN USE

EXERCISE A Directions and descriptions

Statements which refer to the steps to be followed at various stages of growing particular crops may take the form of directions or descriptions. Study the following two columns:

GROWING SALAD PLANTS

I  DIRECTIONS  II  DESCRIPTION

1. Nursery beds
   Sow the seeds first in nursery beds.
   Disinfect the soil of the beds with boiling water.
   Mix the seeds with a little disinfected sand.
   Push the seeds into the soil, but not too deeply.
   Firm the soil well with the tamper.
   Water.

   The seeds are first sown in nursery beds. The soil of these beds is disinfect with boiling water. The seeds are mixed with a little disinfected sand. They are pushed in the soil, but not too deeply. The soil is well firmed down with the tamper, and watered.

Part 1

Write the following descriptions as sets of directions.

GROWING SALAD PLANTS

1. Nursery beds
   See example.

EXERCISE A Directions and descriptions

2. Transplanting
   The seedlings are lifted from the nursery beds about 3 weeks after sowing. They are transplanted at once. Rows are planted 30 cms apart with 30 cms between the seedlings. The earth is well packed down around each plant, and watered.

3. Care of plants
   In hot climates a shelter is made over the salad plant beds. The ground between the plants is watered frequently. The weeds are removed by hoeing. Also, any snails and eelworms are removed. Diseased plants are taken out and burnt. Such plants are replaced with fresh seedlings from the nursery beds.

4. Harvesting
   Salad plants are harvested when the leaves are crisp and green. They are picked in the morning or in the evening when the sun is not so hot. They are not picked when they are wet in case they rot during transport. Plants that have bolted are ploughed under after removing the seeds.

Part 2

Write descriptions based on the following sets of directions. Join sentences together where possible with and, but or so.

GROWING TOMATOES

1. Tilling
   Prepare a deep soil which is friable and well drained.
   Mix manure and fertilizers into the soil.
   Apply potassic and phosphatic fertilizer.

2. Nursery beds
   Sow seeds in nursery beds.
   Disinfect the soil of the nursery beds with boiling water.
   Sow the seeds in rows leaving 10 cms between the rows.
   Do not push the seeds into the soil, merely cover them with a little earth.
   Water twice a day.
   When the seedlings begin to grow remove surplus seedlings and weeds.

3. Transplanting
   Prepare the soil of the tomato beds several weeks before transplanting.
   Work manure into the soil.
   Put stakes in the beds.
   Plant the seedlings in rows 50 cms apart with 40 cms between seedlings.
   Transplant tomato seedlings 5 to 6 weeks after sowing.
   Water the soil of the nursery beds, remove the seedlings without damaging the roots.
Transplant the seedlings at once.
Dig a hole at the base of each stake, lean the seedlings a little sideways, cover the roots with earth.
Pack the earth down well around each seedling, and water them.

4. Care of plants
Water the plants very often.
Cover the soil between the plants with cut herbage or leaves (mulching).
When cultivating remove weeds, snails and insects, take out and burn plants that are diseased or have been spoilt by insects.
Prune plants once or twice a month.
Keep only one or two main stems with their leaves and flowers.

EXERCISE B Directions, descriptions and recommendations

Recommendations tell you how something should be done. (See Unit 6, Language in Use, Exercise B).

EXAMPLE

GROWING SALAD PLANTS

1. Nursery beds
   The seeds should first be grown in nursery beds.
   The soil of these beds should be disinfected with boiling water and the seeds should be mixed with a little disinfected sand. etc.

Recommendations are often combined with descriptions and directions.

EXAMPLES

GROWING SALAD PLANTS

1. Nursery beds
   The seeds should first be grown in nursery beds. The soil of these beds is disinfected with boiling water. Mix the seeds with a little disinfected sand. Push the seeds into the soil but not too deeply. The soil is well firmed with the tamper and watered.

Or
   The seeds are first grown in nursery beds. The soil of these beds should be disinfected with boiling water. The seeds are mixed with a little disinfected sand. Push them into the soil but not too deeply. The soil should be well firmed with the tamper and watered.

Write out paragraphs which give the procedures for growing tomatoes based on the information given below. Use directions, Dir, descriptions, Descr, and recommendations, Recom, as indicated, and produce two paragraphs ((a) and (b)) each time.

Add the following kinds of words where appropriate:

(a) definite and indefinite articles;
(b) pronouns such as they and them;
(c) forms of the verb be.

Join sentences together where possible with and, but or so and relative pronouns such as which. Compare your answers to those for Exercise A, Part 2.

EXAMPLE

GROWING TOMATOES

1. Tilling
   Prepare deep soil, friable, well-drained.
   Mix manure, fertilizers into soil.
   Apply potassic, phosphatic fertilizer.

(a) A deep soil is prepared which is friable and well-drained. Mix manure and fertilizers into the soil. Potassic and phosphatic fertilizers should be applied.

(b) A deep soil which is friable and well-drained should be prepared. Manure and fertilizers are mixed into the soil. Apply potassic and phosphatic fertilizers.

GROWING TOMATOES

2. Nursery beds
   Sow seeds in nursery beds.
   Disinfect soil of nursery beds.
   Sow seeds in rows leaving 10 cms between rows.
   Do not push seeds into soil, merely cover with little earth.
   Water twice daily.
   When seedlings begin to grow, remove surplus seedlings and weeds.

(a) Recom Descr
(b) Recom Descr

3. Transplanting
   Prepare soil of tomato beds several weeks before transplanting.
   Work manure into soil.
   Put stakes in beds.
   Plant seedlings in rows 50 cms apart with 40 cms between seedlings.
   Transplant seedlings 5-6 weeks after sowing.

(a) Recom Descr
(b) Recom Descr

(b) Recom Descr
Water soil of nursery beds, remove seedlings without damaging roots. (use can in (a))
Transplant at once.
Dig hole at base of stake. Lean seedlings sideways. Cover roots well with earth.
Pack earth down well around each seedling and water.

4. Care of plants
Water plants very often.
Cover soil between plants with cut herbage or leaves (mulching).
When cultivating, remove weeds, snails, insects.
Take out and burn plants diseased or spoilt by insects.
Prune plants once or twice monthly.
Keep only one or two main stems with leaves and flowers.

EXERCISE C Drawing conclusions
Statements about requirements for crop growth can express conclusions deduced from general characteristics of the crop. Study the following information about Salad plants.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>grown for their green leaves</td>
<td>well prepared soil</td>
</tr>
</tbody>
</table>

We can express this information as follows:

Salad plants are grown for their green leaves.

So, they need/require a well prepared soil.
Therefore, the soil should be well prepared.
Consequently, it is important/essential that the soil is well prepared.

Part 1
Organize the information in the following tables so that requirements match characteristics, and then use your tables to draw conclusions about requirements for the growing of tomatoes and salad plants, as in the example above.

**Table 1**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tomato roots go down deep into the soil</td>
<td>disinfect before sowing</td>
</tr>
<tr>
<td>2. Tomato plants grow very quickly</td>
<td>water and shade</td>
</tr>
<tr>
<td>3. Tomato seeds are easily attacked by disease</td>
<td>deep soil which does not retain water</td>
</tr>
<tr>
<td>4. Tomato fruits are very delicate</td>
<td>fine, rich soil</td>
</tr>
<tr>
<td>5. Young salad plants wilt in the hot sun</td>
<td>regular pruning</td>
</tr>
<tr>
<td>6. Salad roots do not have a large root system</td>
<td>careful handling at harvest time</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salad plants: fine rich soil</td>
<td>water every morning and evening and constant shelters over the bed</td>
</tr>
<tr>
<td>2. Salad plants: water and shade</td>
<td>grow at the beginning of the rotation</td>
</tr>
<tr>
<td>3. Tomato roots: deep soil which does not retain water</td>
<td>buy selected seeds or mix seeds with a powder</td>
</tr>
<tr>
<td>4. Tomato fruits: regular pruning to keep only one or two main stems</td>
<td>prune at least twice a month</td>
</tr>
<tr>
<td>5. Tomato seeds: disinfecting before sowing</td>
<td>till the soil fairly deeply</td>
</tr>
<tr>
<td>6. Tomato fruits: careful handling at harvest time</td>
<td>do not pile too many on top of each other</td>
</tr>
</tbody>
</table>
Modal verbs

(i) The pattern it to be possible, necessary, impossible, unnecessary, etc.

(ii) The modal verbs can, cannot; may, may not; must, must not; need, need not; should, should not; ought to, ought not to.

If a sentence contains the pattern given in (i) above, it is nearly always possible to rewrite it using a modal verb from (ii).

If a sentence contains the pattern in (i) above, it can nearly always be rewritten using a modal verb from (ii).

The following sentences show the relationship between the meanings of (i) and (ii). Study them carefully before doing the exercise. They are all concerned with rice cultivation.

(a) It is possible to give better care to seedlings in a nursery.

(b) It is possible that burning old rice stubble will reduce diseases in some instances.

(c) Inter-row weeding is impossible to do when seeds are sown broadcast.

(d) It is possible that the field is not even and so some plants will be deeper than others.

(e) The use of mechanical weeder is permitted when the plants are grown in a straight line.

(f) With the broadcast method it is essential not to flood the fields deeply until the seed roots have anchored in the ground.

(g) With broadcast sowing it is essential that the levelling of the bed is accurate.

(h) It is not essential to grow rice seedlings in nurseries.

(i) It is advisable to soak pre-germinated seed for 24 hours before use.

(j) It is not necessary to grow some varieties of rice in ponds.

(k) It is essential not to use non-selective weed killers for rice plants.

Better care can be given to seedlings in a nursery. Burning old rice stubble may (or can) reduce diseases in some instances. Inter-row weeding cannot be done when seeds are sown broadcast. The field may not be even and so some plants will be deeper than others. Mechanical weeder may (or can) be used when the plants are grown in a straight line. With the broadcast method the fields may not (or must not) be flooded until the seed roots have anchored in the ground. With broadcast sowing, the levelling of the bed must be accurate. Rice seedlings need not be grown in nurseries. Pre-germinated seed should be (or ought to be) soaked for 24 hours before use. Some varieties of rice need not be grown in ponds. Non-selective weed killers must (or may) not be used for rice plants.

(l) It is inadvisable to build nursery beds more than five feet wide.

(n) It is necessary to grow wet paddy or swamp rice in water.

EXERCISE

Rewrite the following sentences using one of the verbs given in brackets instead of the expression in italics. Make any other changes in the sentence that are necessary.

1. It is necessary that the fields of plots used for rice growing are surrounded by bunds which hold the water in the field. (must, can, may)

2. An advantage of growing rice seedlings in nurseries is that it is possible to adjust the transplanting time to a period when there is sufficient rain for flooding. (can, should, will)

3. It is always necessary for the nursery to be in the open sunlight and on the most fertile and level soil. It is desirable, too, that water is available for the nursery. It is essential that the beds are surrounded by a low wall and are not more than 5 feet wide so that it is possible to look after the beds easily. (should, can, must; may, will, should; must, may, will; must, can, will)

4. As the seedlings grow in nursery beds increasing the depth of the water is possible, but more than about 1 inch is never advisable and, as a rule, the upper parts of the seedlings are never covered. (may, must, needn't; needn't, should, will; can, needn't, must)

5. Rice grows best on clayey loams that become muddy when puddled, but cultivation on damp alluvial soils, light sands and gravelly and stony soils is also possible. (can, can, must)

6. To hold irrigation water evenly it is essential to level paddy fields; therefore, on hills slopes it is necessary that the land is terraced. (may, must; should, needn't, must)

7. During or just before transplanting nitrogen fertilizer is certain to help the newly planted shoots. (should, will, may)

For the rest of the exercise, choose the most appropriate modal verb for yourself.

8. During winnowing it is important that rice grains are clean and not mixed up with earth and stones.

9. In puddle cultivation it is possible to germinate the seed before sowing by soaking it in water.

10. Before sowing, it is recommended that the seed is treated with Agrosan GN (fungicide).

11. It is best to keep nursery crops free of weeds; watering by hand and protection against insect pests and diseases are both advisable too.
12. Rice responds well to nitrogen application in organic or inorganic form, but it is possible to add superphosphates at 20-40 lb of P O₃ per acre during puddling.

13. It is necessary to use chemical weed killers MCPA and 2,4-D to combat weeds with the broadcast method of sowing.

14. If planting is deeper than 2 inches in depth, growth is certain to be retarded, and, if less, it is possible that the seedlings will lift out.

IV SUMMARIZING

Summarize the following instructions in note form. Draw up tables with headings for each column as follows:

1. Soils and fertilizers.
2. Planting and spacing.
3. Cultivation and diseases.

1. GROWING BEANS

To grow beans the soil must be well prepared. The soil is tilled deeply so it will hold moisture, and the roots can grow down deeply. Beans grow in light soils or in soils rich in humus.

Potassic or phosphatic fertilizers should be used, or a compound fertilizer such as 'Nitrofoska red'.

It is best to grow beans at the end of the rotation. In that way they use up the mineral salts still left in the soil. It is essential to buy new seeds every year.

Sow directly into open beds. Put three seeds in each hole 3 to 4 cms deep. For pole varieties you should leave 1 m between the rows and 70-125 cms between the seed holes. A trellis of sticks 2 m high must be constructed.

When the seedlings come up the weeds should be removed. Heap up the soil around the base of the plants but be careful not to damage the roots.

The main insects are yellow spiders and aphids. Treat the leaves with Phosdrin. Rust can be prevented by treating with 1% Bordeaux mixture. The pods should be picked every day, otherwise no new pods will form and the harvest will be less plentiful. When picking the ripe pods be careful not to damage the young pods which are forming.

2. GROWING ONIONS

The soil must not be too moist. It is essential, therefore, to till deeply so that the water goes down and air can get in. The soil must be rich in humus.

Apply fertilizers. Onions need above all potassium and phosphorous. Be careful not to apply too much nitrogen, or the leaves will develop more than the bulb.

It is best to grow onions after salad plants. Never grow two crops of onions after each other because of the possibility of disease. Never sow seeds which are more than 1 year old.

Small fields: it is better to sow the onions in nursery beds and to transplant later when the seedlings have grown 15-20 cms. Leave 20 to 30 cms between the rows and, along the row, 10 to 15 cms between the plants. Pack down the earth well around each plant.

Large fields: sow in open beds, 25 to 30 cms between plants.

When sowing in nursery beds the soil should be disinfected. It should have a fine tilth and be firm in depth. Make a shelter over the beds and water the beds twice a day. Surplus seedlings should be thinned out and weeds removed.

Eelworms attack the roots and the base of the onion. Infected plants should be pulled up and burnt and the soil disinfected with boiling water or with Vapam or Nemagon. When downy mildew appears, treat the plants with copper based products.

Onions should be harvested only when they are quite ripe. It is best to lift the onions when it is not raining so they will not get wet and rot. Leave them lying on the fields for a few days to dry. Cover with a little grass or straw. To keep onions well, they are stored in a dry, airy place which is well protected against rats or other animals.